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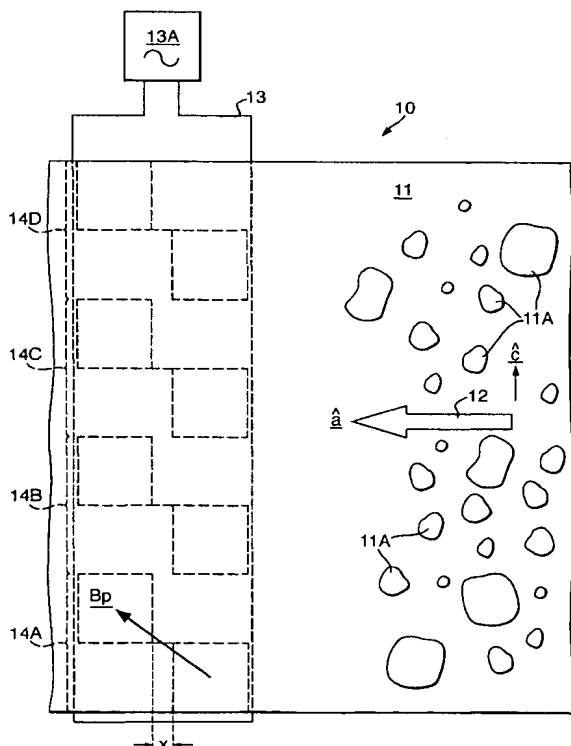
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(54) Title: APPARATUS AND METHOD FOR ESTABLISHING THE POSITIONS OF METAL OBJECTS IN AN INPUT STREAM



(57) Abstract: Apparatus (10) for establishing the positions of metal objects in a mixed input stream of both metal and non-metal objects, the apparatus comprising a differential metal-detecting coil (14A) having a first coil portion wound in a first sense and a second coil portion of generally similar shape and size to the first, wound in a second sense opposite to the first sense, and conveying means (11) for moving objects with respect to, and past, the, differential metal-detecting coil in a plane and in a direction with unit vector  $\hat{a}$ , characterised in that the second coil portion is displaced from the first coil portion by a displacement  $B$  having a component in the plane in a direction with unit vector  $\hat{b}$ , wherein  $0 < \cos^{-1} \hat{a} \cdot \hat{b} < \pi/2$ , and in that the apparatus further comprises analysing means for analysing the form of the output voltage of the coil as a function of time to establish the position of said metal objects in a direction  $c$  in the plane, where  $c$  is defined by  $\hat{a} \cdot c = 0$ .



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